

# TECHNICAL MEMORANDUM

Utah Coal Regulatory Program


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August 23, 2004

OK

TO: Internal File

THRU:  Joe Helfrich, Team Lead

FROM:  Priscilla Burton, Environmental Scientist III, Soils

RE: Reformat and Digitization, CO-OP Mining Company, Bear Canyon Mine, Permit C/015/0025 Task ID #1989.

## SUMMARY:

The Permittee submitted an electronic copy on December 3, 2002 and hard copy of the reformatted Mining and Reclamation Plan (MRP) on February 12, 2003. The Division received additional corrections to this reformatted plan on March 1, 2004. A response to TA\_1863 was received on August 9, 2004.

The .xls file included with the Public information Center copy of the submittal provides a cross reference for new and old plate numbers and new plate titles. The .xls file included with the submittal provides new appendix numbers. The .xls file included with the submittal did not itemize changes to the tables. The .xls file included with the submittal did not cross reference changes to the narrative. This memo contains cross-reference charts for the narrative, appendices, tables and maps for information pertinent to soils of the site.

Soils information previously located in Chapter 8 and Appendices is now found in Chapter 2 and Appendices, consequently all the maps and table numbers begin with 2. i.e. Plates 2-1A rather than 8-1 is the Main Area Soils Map. Cross-reference charts are key to the understanding of previous technical memos on the Bear Canyon Mining and Reclamation Plan. **The Division should attach cross-reference charts to previous Technical Analysis for the Bear Canyon Mine on file in the Public Information Center.**

Changes to the operations and reclamation plan in this submittal were commented upon. The reformatted MRP includes sampling of the waste rock, roof and floor conducted in 2003.

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TECHNICAL ANALYSIS:

## GENERAL CONTENTS

### PERMIT APPLICATION FORMAT AND CONTENTS

Regulatory Reference: 30 CFR 777.11; R645-301-120.

**Analysis:**

After viewing quick links to appendices and other connections within the document, the viewer must use the document button on the tool bar to return to the main document.

Soils information previously located in Chapter 8 and Appendices is now found in Chapter 2 and Appendices, consequently all the maps and table numbers begin with 2. An .xls file accompanying the submittal provides a quick check to the changes made in Plate and Appendix titles. The Division has created the cross-references for the narrative sections and table for use when reading the previous technical reviews.

The .xls file included with the Public information Center copy of the submittal provides a cross reference for new and old plate numbers and new plate titles. It is reprinted below with map titles added by the Division. New listings are in bold. This .xls file is not found on the other electronic copies of the submittal or in the hard copy.

Plate 2-1A	Formerly 8-1	Soils Map (Main Area)
Plate 2-1B	Formerly 8-1A	Soils Map (WHR Area)
Plate 2-2A	Formerly 8-2	Main Topsoil Stockpile Area
Plate 2-2B	Formerly 8.7	WHR Topsoil Stockpile Area
<b>Plate 2-2C</b>	<b>Created for WHR Tank Seam</b>	<b>WHR Tank Seam Topsoil</b>
<b>Plate 2-2D</b>	<b>Created for Mohrland</b>	<b>Mohrland Topsoil Stockpile Area</b>
Plate 2-2E	Formerly 8-6	Tank Seam Road Topsoil Stockpile
deleted	Plate 8.4	Ballpark Topsoil Pile Area
		Reclamation Area (TS 1 & 2
Plate 2-3A	Formerly 8-5A	Ballpark Area)
		Reclamation Area (TS 2, 3, 4, & 9,
Plate 2-3B	Formerly 8-5B	Shower House Area)
		Reclamation Area (TS 5-8, Load-out
Plate 2-3C	Formerly 8-5C	Area)
		Reclamation Area (TS 6, Mine
Plate 2-3D	Formerly 8-5D	Access Road Area)
Plate 2-3E	Formerly 8-5E	Reclamation Area (TS 10 & 11,

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Plate 2-3F	Formerly 8-5F	Tank Seam Portal Area Reclamation Area (TS 12 & 13, WHR Access Road Area)
Plate 2-3G	Formerly 8-5G	Reclamation Area (TS 12, 14, 15, 16, & 17, WHR Portal Area)
Plates 5-2 series	Formerly 2-4 series	Surface Facilities Blind Canyon

Plates in Chapter 2 (Soils) of the document are exactly the same as the existing MRP with one exception, Plates 2-2C (WHR Tank Seam Topsoil Stockpile Area) and 2-2D (Mohrland Topsoil Stockpile Area) are new listings and neither could be accessed. Apparently they have not been created yet.

Plate 2-2F Ballpark Topsoil Pile Area has been removed from the new format. This is appropriate since the Division approved the removal of the Ballpark from the disturbed area in 2001; and, Table 2-5, Topsoil Summary, does not include the Ball Park soils for use as substitute topsoil during final reclamation. Figures 2-1 and 2-2 in Chapter 2 are the same as Figures 8.9-1 (Photographs of the Ball Park Area) and 8.9-2 (Ball Park Topsoil Storage Pile) in the approved MRP. This information has been retained for historical purposes.

The .xls file included with the submittal provides new appendix numbers. For information pertinent to soils of the site, a cross-reference from the current MRP to the reformatted MRP is provided in the table below. There are no new listings of appendices for soils information.

Appendix 2-A	Formerly 8A	Soil Test Reports
Appendix 2-B	Formerly 8C	Prime Farm Lands
Appendix 2-C	Formerly 8D	Substitute Topsoil Material (Downcast)
Appendix 2-D	Formerly 8E	In-Place Plant Growth Material
Appendix 2-E	Formerly 8B	SCS Soil Survey
Appendix 2-F	Formerly 8F	WHR Soil Resource Inventory and Assessment WHR Tank Seam Soil Resource Inventory and Assessment
Appendix 2-G	Formerly 8G	Cut & Fill calculations (for areas TS3-9)
Appendix 5-I	Formerly 3-L	WHR Tank Seam Pad and Access Road
Appendix 5-K	Formerly 3-P	Sediment Pond Material
Appendix 5O	Formerly 3-K	Alternate Sediment Control Areas (includes topsoil piles)
Appendix 7K	Formerly 7K	Toxic Materials & Handling
Appendix 5D	Formerly 3-E	

The .xls file included with the submittal did not itemize changes to the tables. Tables in Chapter 2 (Soils) of the document are exactly the same as the existing MRP with one exception, the Analytical Parameters For Baseline Soil Data Table 8.8-1 has been replaced with two tables

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(Table 2-4a and 2-4b) that were taken from the January 2003 DRAFT Division Soils Guidelines for Management of Topsoil and Overburden. Below is a cross-reference of the current and previous table numbers and new table titles in Chapter 2 of the document:

Table 2-1	Formerly 8.3-1	Soil Map Units
Table 2-2	Formerly 8.3-2	Soil Unit Acreage Within the Disturbed Area
Table 2-3	Formerly 8.9-2	Available Substitute Topsoil Material
Table 2-4a	<b>Replaced</b> 8.8-1	Analytical Methods for Baseline Soils Data
Table 2-4b	<b>Replaced</b> 8.8-1	Additional Analyses Required for Substitute Topsoil, Overburden, Spoil and Coal Mine Waste
Table 2-5	Formerly 8.9-5	Topsoil Summary Table
Table 2-6	Formerly 8.9-4	Ball Park Seed List
Table 2-7	Formerly 8.9-1	Reclamation Area Summary
Table 2-8	Formerly 8.9-3	Substitute Topsoil Summary
Table 2-9	Formerly 8.11-1	Final Grading Test Sample Density
Table 5K-1	Formerly Table 3P-1	WHR Tank Seam Topsoil Recovery
Table 5O-1	Formerly Table 3K-1	Analytical Parameters for Overburden (in Appendix 5O)

The .xls file included with the submittal did not cross reference changes to the narrative. Below is a cross-reference of the current and previous narrative sections pertaining to the soils resource information, topsoil and subsoil operations plan, soils redistribution plan, and stabilization plans.

Section R645-301-221	Formerly 8-6	Prime Farm Lands
Section R645-301-222	Formerly 8-1 & 8-2	Soil Survey
Section R645-301-222.100	Formerly 8-1	Soil Maps
Section R645-301-222.200	Formerly 8-3	Soil Identification
Section R645-301-222.300	Formerly 8-3	Soil description
Section R645-301-222.400	No previous reference	Soil Productivity
Section R645-301-223	Formerly 8-7 and 8.7-1	Soil Characterization
Section R645-301-224	Formerly 8.9-1	Substitute Topsoil
Section R645-301-230	Formerly 8.8.1.1	Operation Plan
Section R645-301-231	Formerly 8.8.1.1	General Requirements
Section R645-301-231.100	Formerly 8.8.1.1 and 8.8.1.2 & 8.9.7	Topsoil Removing and Storing
Section R645-301-231.300	Formerly 8.11	Soil Testing Plan
Section R645-301-231.400	Formerly 8.9, 8.9.2 through 8.9.6	Construction, Modification and Maintenance
Section R645-301-232	No previous reference	Topsoil and Subsoil Removal
Section R645-301-232.100	Formerly 3.5.4.2	Topsoil Removal Prior to Disturbance
Section R645-301-232.200	No previous reference	Insufficient Topsoil
Section R645-301-232.300	No previous reference	Topsoil Material Less Than 6" Thick

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Section R645-301-232.400	No previous reference	Area where topsoil will not be recovered
Section R645-301-232.500	No previous reference	Subsoil Segregation
Section R645-301-232.600	No previous reference	Timings
Section R645-301-233	Formerly 8.9	Topsoil Substitutes and Supplements
Section R645-301-234	Formerly 8.8.1.3	Topsoil Storage
Section R645-301-240	Formerly 8.9.1	Reclamation Plan
Section R645-301-241	No previous reference	General Requirements
Section R645-301-242	Formerly 8.10	Soil Redistribution
Section R645-301-243	Formerly 8.11	Soil Nutrients and Amendments
Section R645-301-244	Formerly 8.5	Soil Stabilization
Section R645-301-250	Formerly 8.4	Performance Standards

Cross-reference charts are key to the understanding of previous technical memos on the Bear Canyon Mining and Reclamation Plan. **The Division should attach these cross-reference charts to previous Technical Analysis for the Bear Canyon Mine on file in the Public Information Center.**

### Findings:

The information provided meets the minimum general contents requirements of the Regulations.

## ENVIRONMENTAL RESOURCE INFORMATION

Regulatory Reference: Pub. L 95-87 Sections 507(b), 508(a), and 516(b); 30 CFR 783., et. al.

### SOILS RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.21; 30 CFR 817.22; 30 CFR 817.200(c); 30 CFR 823; R645-301-220; R645-301-411.

### Analysis:

For the most part, soils information has not changed since the last submittal two major soil amendments were received AM01A in 2001 and AM03B in 2003. Soil productivity information is found in Appendix 2-E, SCS Soil Survey and Appendix 3-B Miscellaneous Vegetation Information.

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**Findings:**

The information provided meets the minimum soils resource information requirements of the Regulations.

**PRIME FARMLAND**

Regulatory Reference: 30 CFR 785.16, 823; R645-301-221, -302-270.

**Analysis:**

There has been no change to the information provided previously.

**Findings**

The Division concurs with the Natural Resources Conservation Service that there are no prime farmlands within the disturbed area.

**OPERATION PLAN**

**TOPSOIL AND SUBSOIL**

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-230.

**Analysis:**

**Topsoil Removal and Storage**

Information in the reformatted submittal is the same as the approved plan except where noted below.

Table 2-5 Topsoil Summary is the equivalent of Table 8.9.7 in the currently approved MRP. Table 2-5 details the storage of 16,134 CY of topsoil and the 36,452 CY of additional substitute topsoil, for a total of 52,586 CY of topsoil and substitute topsoil.

The information in the reformatted plan is current with regard to location of topsoil stockpiles

Table 2-7 (Formerly Table 8.9-1) indicates that there area 28.03 "New acres" of disturbance. That figure is changed from the approved plan which indicates 27.90 acres of disturbance. The change is in the TS-16, WHR TS Lower Portal Access Road which was

formerly listed as 0.76 acres. The narrative in Section R645-301-242 under RS-16 has also been modified from the approved MRP to indicate that the lower portal access road would be widened in two locations as shown on Plate 2-3G and in Appendix 5-K. The narrative indicates that 124 cu yds of topsoil was stockpiled from this location.

### **Findings:**

The information provided meets the minimum Operations Topsoil/Subsoil requirements of the Regulations.

## **SPOIL AND WASTE MATERIALS**

Regulatory Reference: 30 CFR Sec. 701.5, 784.19, 784.25, 817.71, 817.72, 817.73, 817.74, 817.81, 817.83, 817.84, 817.87, 817.89; R645-100-200, -301-210, -301-211, -301-212, -301-412, -301-512, -301-513, -301-514, -301-521, -301-526, -301-528, -301-535, -301-536, -301-542, -301-553, -301-745, -301-746, -301-747.

### **Analysis:**

#### **Coal Mine Waste**

Sediment pond clean out is described in Appendix 5O. A maximum of 150 cu yd of coal mine waste will be temporarily stored on the main storage pad shown on Plate 5-2C. Waste rock from the Wild Horse Ridge will be hauled to Hiawatha slurry pond 5A. Prior to being hauled it will be tested according to Table 5O-1 of Appendix 5O.

In Mine roof samples are in Appendix 6-C for samples taken through 1995. Samples taken from RM1 were analyzed in January 2003 and are included in Appendix 6C, page 29. The RM1 samples show that the coal has a pH of 3.7, no neutralization capacity and a boron content of 10 ppm.

Statements in the currently approved plan in Section 3.6.4.5 (page 3-77) and Section 3.6.4.b (page 3-69) describe vacuuming or washing down "adjacent areas" that have been impacted by coal fines. The current MRP reads as follows on page 3-69 Section 3.6.4 Backfilling & Grading Plans:

*Adjacent areas that have been impacted by coal fines or other results of the operation will be examined prior to reclamation. If coal fines are evident in quantities that exceed 50% of the exposed ground, then such material will be removed. Methods of removal will consist of either vacuuming (if justified by large quantities), or by washing down the area by high-pressure water hoses. The wash down procedure is particularly effective on rock and rocky slopes. All*

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*other extraneous debris from the operations will also be removed from the areas. Disposal of all materials will be as described in Section 3.6.3.2.*

*It should be noted that the existence of small to moderate amounts of coal fines has not been established as detrimental to either soils or vegetation: therefore, amounts less than the 50% figure cited above will not be removed.*

The Division indicated during a meeting with Co-Op Mining on September 18, 2003 and in a telephone conference April 27, 2004, that this statement is not in keeping with R645-301-141 which requires that coal mining and reclamation operations are conducted only on those lands specifically designated within the permit area. During the course of operations, if adjacent areas are affected by fugitive dust or coal spills, then the Permittee must incorporate these areas into the disturbed area and the Permittee will be held responsible for complete reclamation of those areas. The Division also indicated that for post-SMCRA disturbances, there is no acceptable level of coal fines on the surface. During this meeting, the Division emphasized that a Permittee can not disturb outside the disturbed area and that the reformatted MRP should indicate the Permittee would "clean the area to the extent of disturbance [contributed by them]."

During this meeting, the 50% figure was discussed. This figure was derived from a report prepared for Co-Op Mining Company by Mangum Engineering Consultants (Kaysville UT 84037) in December 1993. The Mangum report indicates that the cover on the lower pad contains less than 20% coal material in the top two feet. Nowhere does this report indicate a 50% surface coal figure as being acceptable.

Immediately following the April 2004 teleconference, the Division faxed to Co-Op Mining a copy of the "Examples of Percent of Area Covered," taken from Schoenberger, P.J. Wysocki, D.A., Benham, E.C. and Broderson, W.D. 1998. Field book for Describing and Sampling Soils. Natural Resource Conservation Service. USDA, National Soil Survey Center, Lincoln NE. The purpose of this fax was to illustrate how 50% cover would appear on the soil surface and what a 20% coal figure would look like within the top two feet of soil.

The last Technical Analysis contained the following deficiency:  
**R645-301-542.200**, The statement on page 5-40 that coal fines on adjacent areas will be removed from the surface of adjacent areas with water hoses or by vacuuming until only 50% of the surface is coal fines should be removed or reworded as per telephone conference on 4/27/04.

In response to this deficiency, the Permittee revised Section 542.200b (page 5-40) of the reformatted MRP as follows (received on August 9, 2004):

*In disturbed areas which contain coal fines from current operations and are not proposed to be regraded, and it is determined the coal fines are detrimental to the growth of*



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*vegetation, the coal fines will be removed to pre-mining levels. Methods of removal will consist of either vacuuming (if justified by large quantities), or by washing down the area by high-pressure water hoses. The wash down procedure is particularly effective on rock and rocky slopes. All other extraneous debris from the operations will also be removed from the areas. Disposal of all materials will be as described in R645-301-529.*

*It should be noted that the existence of small to moderate amounts of coal fines has not been established as detrimental to either soils or vegetation; therefore, amounts less than the 50 pct figure cited above will not be removed.*

This revision eliminates the "adjacent area" term and describes coal affected soil as disturbed area, however, the clause, "and it is determined the coal fines are detrimental to the growth of vegetation," places the burden of proof on the Division to establish and quantify the harm done to fish and wildlife and related environmental values. This is contrary to R645-301-528.320, which requires that all coal mine waste is placed in a disposal area approved by the Division. Consequently, the revision is unacceptable. In addition, the next paragraph should not refer to the 50% figure as it was removed from the paragraph above. This modification to the narrative could remain a deficiency or be addressed in the context of a Division Order.

### Findings:

The information provided does not meet the minimum Operation Spoil and Waste Materials requirements of the Regulations. Prior to approval, the revised MRP must either conform to the requirements set below or a Division Order will be written to request that the Permittee address the following deficiency:

**TR645-301-528.230, R645-301-536, and R645-301-542.730,** The modifying clause on page 5-40 which reads, "and it is determined the coal fines are detrimental to the growth of vegetation," places the burden of proof on the Division to establish and quantify the harm done. This burden of proof is contrary to R645-301-528.320, which requires that all coal mine waste is placed in a disposal area approved by the Division. The statement should be reworded to indicate that disturbed areas will be reclaimed such that coal fines and fragments will be placed in a disposal area. In addition, the next paragraph should not refer to the 50% figure as it was removed from the preceding paragraph.

## HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

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**Analysis:**

**Acid- and Toxic-Forming Materials and Underground Development Waste**

Section 542.200, page 5-39, refers the reader to Appendix 5D and Appendix 6C for acid toxic information. Appendix 5D Toxic Materials & Handling provides limited information on the characteristics of soil, coal and sediment pond sludge through 1989. Appendix 6C Coal & Rock Characteristics has samples of roof and floor through 1995 and includes one sample analyzed in January 2003 of roof, floor, coal and sediment pond clean out. The Division expects that both Appendices will be updated to include all sampling conducted in 2004 and future sampling.

**Findings:**

The information provided meets the minimum Operation Hydrologic Information requirements of the Regulations.

## **RECLAMATION PLAN**

### **TOPSOIL AND SUBSOIL**

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-240.

**Analysis:**

**Redistribution**

There are no changes to the previously approved reclamation plan.

**Findings:**

The information provided is meets the requirements of the Regulations for Topsoil/Subsoil Reclamation Plan.

### **STABILIZATION OF SURFACE AREAS**

Regulatory Reference: 30 CFR Sec. 817.95; R645-301-244.

**Analysis:**

There has been no change to the information presented for stabilization of surface areas.

Gouging to an 8 inch depth on the pad areas is referred to in Section 542.200 page 5-41. Tank seam gouging to a depth of 8 – 12 inches is described on page 5-44. Section 542.200 page 5-47 refers the reader to Appendix 7-K for information on deep gouging during Wild Horse Ridge reclamation. Appendix 7-K refers to the use of gouging only as part of the alternate sediment control during reclamation of BTCA "Z," the ASCA for WHR topsoil stockpile area and conveyor access road slopes (pg 7K-31).

The Permittee should investigate the use of deep gouging 18 - 24 inches on the reclaim site. Deep gouging has been used successfully on reclamation sites through out Utah and has been described in The Practical Guide to Reclamation in Utah, page 66. This publication is available on the web at <http://www.dogm.nr.utah.gov>

Mulching is described in Section R645-301-341 page 3-41 as well as on pages 5-44 and 5-48 of Section 542.200. The Permittee intends to use excelsior blanket on slopes of 2h:1v.

Section 542.200, page 5-44 indicates that rocks will be embedded into the upper surface as described on page 5H-27 (in a May 10, 1994 letter from Dames and Moore). As stated on page 5-44, the goal will be to obtain a minimum cover of 32% rock, similar to the reference area. Wind protection through the use of boulders is also described in R645-301-412.110 Method for Achieving Post-Mining Land Use.

**Findings:**

The information provided meets the minimum requirements of the Regulations to provide stabilized surface areas.

**RECOMMENDATIONS:**

Cross-reference charts created by the Division under Permit Application Format and Contents are key to the understanding of previous technical memos on the Bear Canyon Mining and Reclamation Plan. Cross-references should be included with previous copies of the Technical Analysis of the Bear Canyon Mining and Reclamation Plan on file in the Public Information Center.

The reformatted plan accurately reflects the existing MRP and could be accepted as the official copy by the Division. However statements made on page 5-40 remain unacceptable to

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the Division as explained on pages 8 – 10 of this memo and could become the subject of a Division Order.

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